OPTIMUS 50 kW generator
PCB kV control EZ130 modification instruction
for all PCB's 4512 108 05843/4/5 for Optimus 50kW
and 4512 108 08661--4 for 65/80kW

With the 50kW OPTIMUS generator, which has only one kV_power part to feed the primary side of the HV tank, it might happen, that some errors occur during installation. Sometimes these symptoms happen after installation under certain circumstances.

The errors coming up are (most of he time all together)

02HG	warning	kV actual value out of range	±(4% +1kV)
02HH	error	dto.	20kV > U > 170kV
03PA	emission current zero measured.		

The kV waveform, measured at EZ130 X3 (total kV) against EZ130 X6 (ground), might look like the attached scope pictures (1) and (2) in any kV stage.
Scope settings:
- 1V/div (20kV/V)
- 2ms/div
- trigger with positive slope (kV rise) or external trigger CTRL_X_C/ EZX74 negative slope (backpanel measuring point).

The exposures during adaptation are about 10 ms long from the 3rd exposure on (ca. 120 exposures during adap for each filament).

The problem during adaptation normally happens with the large focal spot, where exposures with 50kW are switched.
If nothing special happens during adaptation (no errors codes, no break in of kV) then switch exposures with large focus, max kV, 10ms with max mA or in mAs technique with an exposure time of ≈10ms.

If the errors are coming up and/or the kV waveform is similar to the scope pictures (1) and/or (2) then solder an additional resistor parallel to resistor R226 on PCB EZ130 kV_control.
X The value is 475kΩ ⅛W (12NC 2322 156 14754), the position on the PCB is given on the layout drawing.

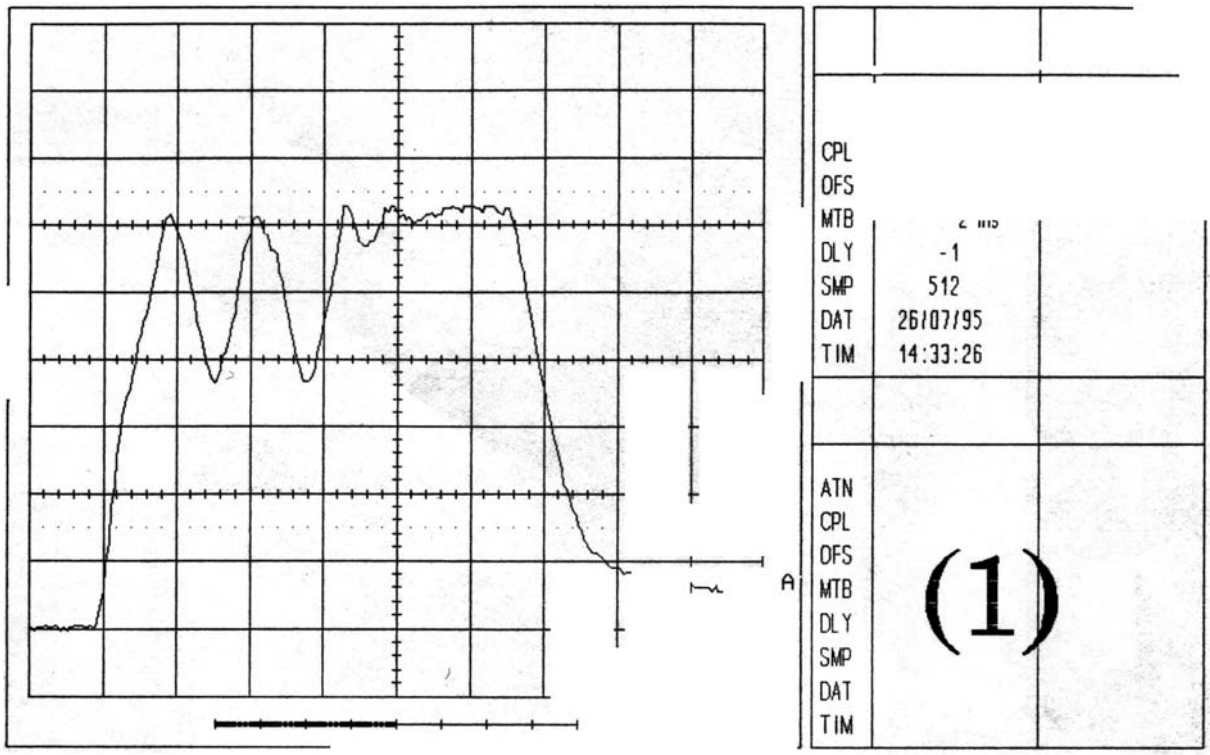
Repeat adaptation (if it failed due to the errors) or exposures with parameters which failed during normal work (typically the highest kV stages with kV-mAs or kV-AEC techniques).

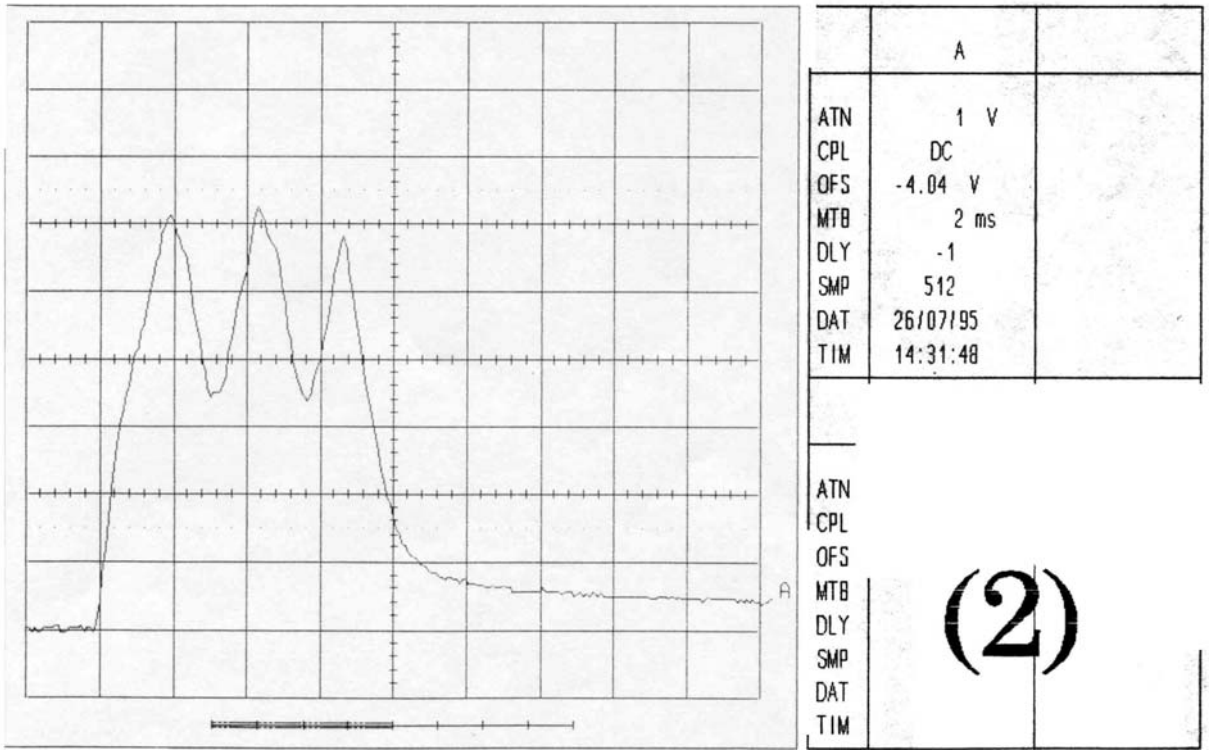
The 'swing' of regulation should not increase 10kV (see scope picture (3)).

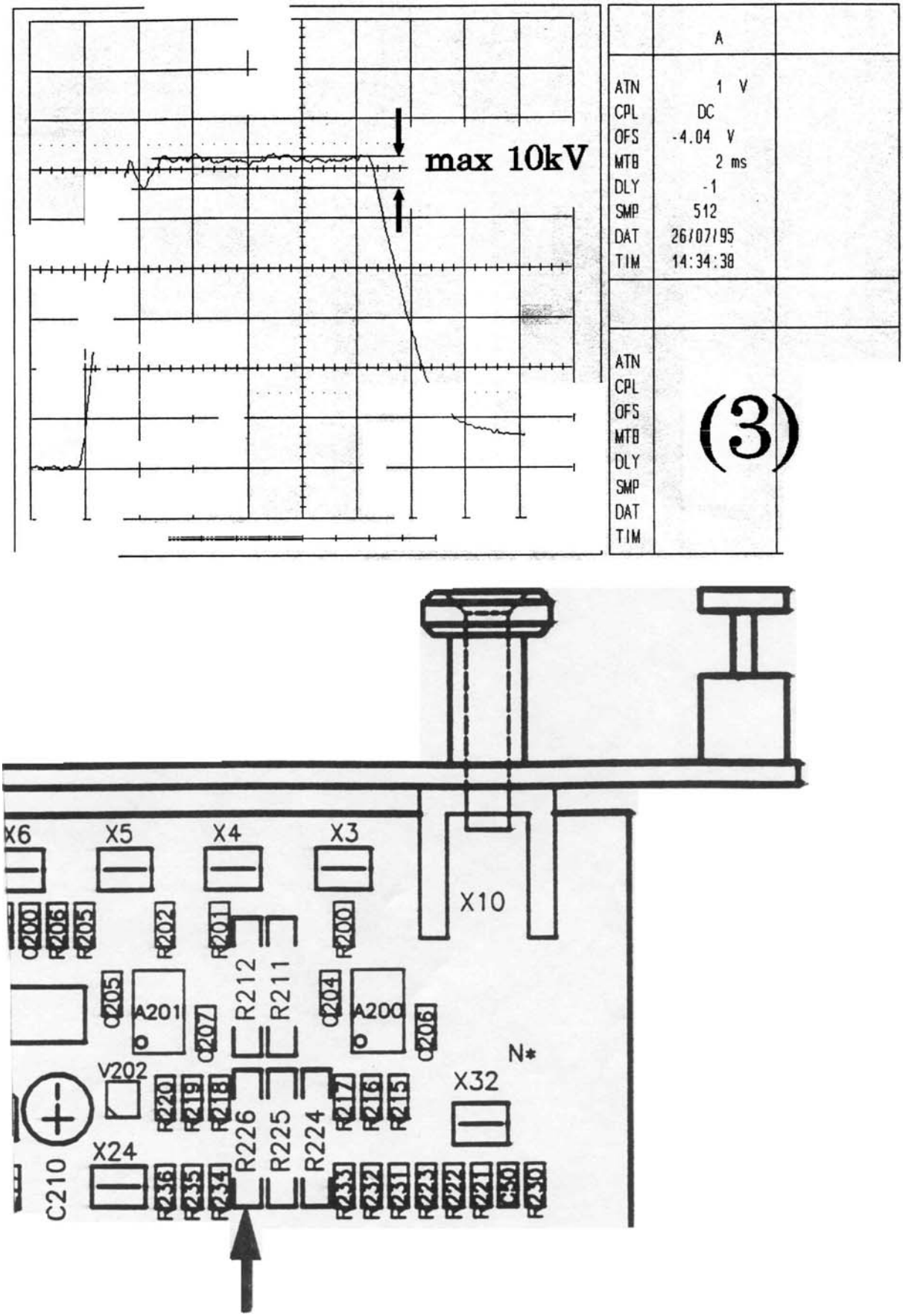
If everything is ok then change the PCB code number from 4512 108 05843 to ....3M (modified) or ....4M.
If the modification does not cure the problem then order PCB 4512 108 05845 in Hamburg and please send the replaced PCB back to Hamburg to my office. Please add the generator serial number, the installed tube type and the error log index. Thank you for your support.

Duve

X Also possible: 392kΩ
475kΩ
562kΩ
681kΩ
825kΩ
1MΩ


CPL
OFS
MTB
DLY -1
SMP 512
DAT 26/07/95
TIM 14:33:26
ATN
CPL
OFS
MTB
DLY
SMP
DAT
TIM
(1)


A
ATN 1 V
CPL DC
OFS -4.04 V
MTB 2 ms
DLY -1
SMP 512
DAT 26/07/95
TIM 14:31:48
ATN
CPL
OFS
MTB
DLY
SMP
DAT
TIM
(2)


max 10kV
A
ATN 1 V
CPL DC
OFS -4.04 V
MTB 2 ms
DLY -1
SMP 512
DAT 26/07/95
TIM 14:34:38
ATN
CPL
OFS
MTB
DLY
SMP
DAT
TIM
(3)
X6
X5
X4
X3
X10
A201
A200
R212
R211
V202
X32
N*
X24
R226
R225
R224
C210